

## **Fire Prevention 1 Student Supplement**

In addition to the textbooks and/or codes and standards required for Fire Prevention 1 students are required to read the following materials on schedule with the dates listed in the course syllabus.

### **Supplemental Materials**

- Excerpt from the *Fire Data Analysis Handbook*
- Preincident Plan Symbols and Documents
- Code Enforcement and Appeal Process
- Hazardous Processes
- When Hazardous Materials are Encountered During a Company Inspection
- State of California WUI Regulations

Print materials are included in this student supplement. Web content can be viewed or downloaded using the URL(s) provided.

### Excerpt from the *Fire Data Analysis Handbook*

#### Introduction

The primary objective of the National Fire Incident Reporting System is to describe statistical techniques for analyzing data typically collected in fire departments. Motivation for the section stems from the belief that fire departments collect an immense amount of data, but do very little with it. Think for a minute about the reports you complete on incidents. You probably document the type of situation found, action taken, time of alarm, time of arrival, time completed, number of engines responding, number of personnel responding, and many other items. For fires, the list grows even longer to include area of fire origin, form of heat of ignition, type of material involved, and other related facts. Additionally, if civilian or fire fighter injuries occur, other reports need to be completed.

A compelling reason for these reports is a legal requirement for documenting incidents. Victims, insurance companies, lawyers, and many others want copies of reports. Indeed, fire departments maintain files for retrieval of individual reports.

The reports can, however, provide a more beneficial service to fire departments by yielding insight into the nature of fires and injuries in their jurisdiction. Basic information probably is available already. Typically, the number of fires handled last year, the number of fire-related injuries, and the number of fire deaths are tracked. It is another story, however, if more probing questions are asked:

- How many fires took place on Sundays, Mondays, etc.?
- How many fires took place each hour of the day or month of the year?
- What was the average response time to fires?
- How much did response times vary by fire station areas?
- What was the average time spent at the fire scene?
- How much did the average time vary by type of fire?

This handbook describes statistical techniques to turn data into information for answering these types of questions and many others. The techniques range from simple to complex.

#### Why Data Analysis?

There still may be a question in your mind as to why we should go to all this trouble to analyze data. Many decisions do not require analysis, such as decisions on personnel, grievance proceedings, promotions, and even decisions on how to handle a fire. It is certainly true that fire departments can continue to operate in the same way they always have without doing a lot of analysis.

On the other hand, there are three good reasons for looking closely at the data:

- To gain insights into fire problems
- To improve resource allocation for combating fires
- To identify training needs

Probably the most compelling is that analysis gives insight into fire problems, which in turn can affect operations in the department. One may find, for example, that the average time to fires in

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an area is six minutes, compared to less than two minutes overall. This result may be helpful in requests for more equipment, more personnel, or justifying another fire station.

As an example of improved resource allocation, statistical analysis of emergency medical calls can determine the impact of providing another paramedic unit in the field. Increasing the number of EMS units from four to five may, for example, decrease average response times from five minutes to three minutes – a change that may save lives.

Another reason for analysis is to identify training needs. Most training on fire fighting is based on a curriculum that has been in place for many years. It makes sense to see how training matches characteristics of fires in a particular jurisdiction. This is not to say that other training is not important, since an exception can always occur. However, knowing more about the fires in an area can improve the training. Additionally, an analysis of fire fighter injuries may indicate a need for certain types of training.

#### **National Fire Incident Reporting System (NFIRS)**

The National Fire Incident Reporting System (NFIRS) began over 25 years ago with the aim of collecting and analyzing data on fires from departments across the country. More than 14,000 fire departments in 42 states now report their fires and injuries to NFIRS. This makes NFIRS the largest collector of fire-related incident data in the world. NFIRS contributes over 900,000 fire incidents each year to the National Fire Database.

Incident data collection is not new. In 1963 the National Fire Protection Association (NFPA) developed a dictionary of fire terminology and associated numerical codes to encourage fire departments to use a common set of definitions. This dictionary is known as the NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*. The current set of codes used in NFIRS version 5.0 represents the merging of the ideas from NFPA 901 and the many suggested improvements from the users of the NFIRS 4.1 coding system.

Version 5.0 of NFIRS consists of 11 separate modules in which fire departments can report any type of incident they respond to. The basic module (Module 1), which is required, includes incident number and type, date, day of the week, alarm time, arrival time, time in service, and type of action taken. Modules 2 through 5 are required if applicable. If the incident is a fire, the fire module (Module 2) is completed. This includes property details, cause of ignition, human factors, equipment involved, and other information. If it is a structure fire, Module 3 is completed. This would include such things as structure type, main floor size, fire origin, presence of detectors and automatic extinguishment equipment, and other data. If there were civilian casualties or fire service casualties, Modules 4 or 5, respectively, would be filled out. The remaining modules are optional at the local level. They include EMS (Module 6), Hazardous Material (Module 7), Wildland Fire (Module 8), Apparatus or Resources (Module 9), Personnel (Module 10), and Arson (Module 11).

Usually, the state fire marshal's office in each NFIRS state has the responsibility for collecting data from its fire departments. They normally collect data in two ways. One way is that fire departments without any data processing capabilities send their paper reports to the fire marshal's office (or cognizant office). The office then enters the reports into a computer system.

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Local departments with data processing capabilities send their data electronically or on diskettes or tapes. In either case, the state fire marshal's office merges all reports onto a database.

This statewide database then is forwarded electronically to the National Fire Data Center (NFDC) at the U.S. Fire Administration (USFA). The NFDC then can compare and contrast statistics from states and large metropolitan departments to develop national public education campaigns, make recommendations for national codes and standards, guide allocations of federal funds, ascertain consumer product failures, identify the focus for research efforts, and support federal legislation.

Every fire department is responsible for managing its operations in such a way that fire fighters can do the most effective job of fire control and fire prevention in the safest way possible. Effective performance requires careful planning, which can take place only if accurate information about fires and other incidents is available. Patterns that emerge from the analysis of incident data can help departments focus on current problems, predict future problems in their communities, and measure their programs' successes.

The same principle is applicable at the state and national levels. NFIRS provides a mechanism for analyzing incident data at each level to help meet fire protection management and planning needs. In addition, NFIRS information is used by labor organizations on a variety of matters, such as workloads and fire-fighter injuries.

### References

- FEMA. (2004). *Fire Data Analysis Handbook, Second Edition*. (p. 1-4). Also available at <http://www.usfa.fema.gov/downloads/pdf/publications/fa-266.pdf> as of December 27, 2012.

### **Preincident Plan Symbols and Documents**

Preincident plan diagrams should use standardized symbols to represent building construction, fire protection system, and hazard data.

#### **Preplan Symbols**




















Preplan symbols are adopted by the local agency. They are usually based on regional or national standards. Symbols are usually included for:

- Building Construction
- Water Supply and Distribution
- Utility and HVAC Controls
- Egress and Access
- Fire Protection Systems

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	Truss Construction		
	Knox Box		
			Gas Shut off
	NFPA 704		Water Shut Off
	Fence Line		Electrical Shut Off
	Fire Wall (3 hour)		Sprinkled Areas
	Stairs		Not Sprinkled Areas
	FDC attached		Sky lights
	FDC Free Standing		Smoke vents
			Stand Pipe Connection

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### **Preincident Plan Documents**

A preincident plan contains general and detailed information that is used by responders to manage emergencies. The plan's format is adopted by each local agency and usually consists of an information summary form and diagram.

### **Information Summary Form**

Some agencies use summary forms for more detailed preincident data. Provide information related to the construction, physical layout, water supply, protection systems, utilities, hazards and other information of a building or facility. Additional data can include fire flow, tactics, operations of HVAC systems, etc.

### **Building Diagrams**

Presents preplan information in a clear, concise and visual format. Details of diagrams vary by agency. Diagrams can be plot plans of building and facility layouts and more detailed floor plans of specific buildings. Information relevant for emergency operations should be included. Other planning information should be included on a summary form.

### **Diagram Examples**

Diagram format varies by agency. These are examples of a plot plan and floor plan used by a local California agency.

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**Humboldt Fire District #1 Tactical Pre-Fire Plan**

Date: 02/07/05

WATER SOURCE: 1st / Main		GPM @ 20: 900		OCCUPANCY ADDRESS: 2240 Main St.	
FIRE TYPE AND LOCATION: N/E Corner of building		FIRE TYPE: Local		OCCUPANCY NAME: Care Home	
OWNER / PHONE: Joan Smith 442-1234				RESPONSIBLE AND PHONE: Joan Smith 442-1234	
CONSTRUCTION TYPE: Type V, 1 hr.		ROOF TYPE: Comp/ Wood Truss		FLOOR TYPE: concrete slab	
BUILDING DIMENSIONS (A/P/R/O):					

**SAFETY:** Occupancy Load Day: 80 Night: 50

Both ambulatory and non-ambulatory elderly residents.  
Evacuation and rescue and first priority.

**TACTICS:** First due engine to lay from hydrant at Walnut and Fern to FDC in front of building. Second due to assist with life safety and evacuation. Third due to assist with fire control.

**FLOOR PLAN:**

300Ft

Main Street

Fern Street

Care Home

Neighborhood Market

Shell Gas Station

Main St Plaza

Legend:

- Electrical
- Gas
- HazMat
- Water
- Souble
- Hydrant
- FDC/Sprinkler
- Knox Box

DRAWN BY: FF Banducci

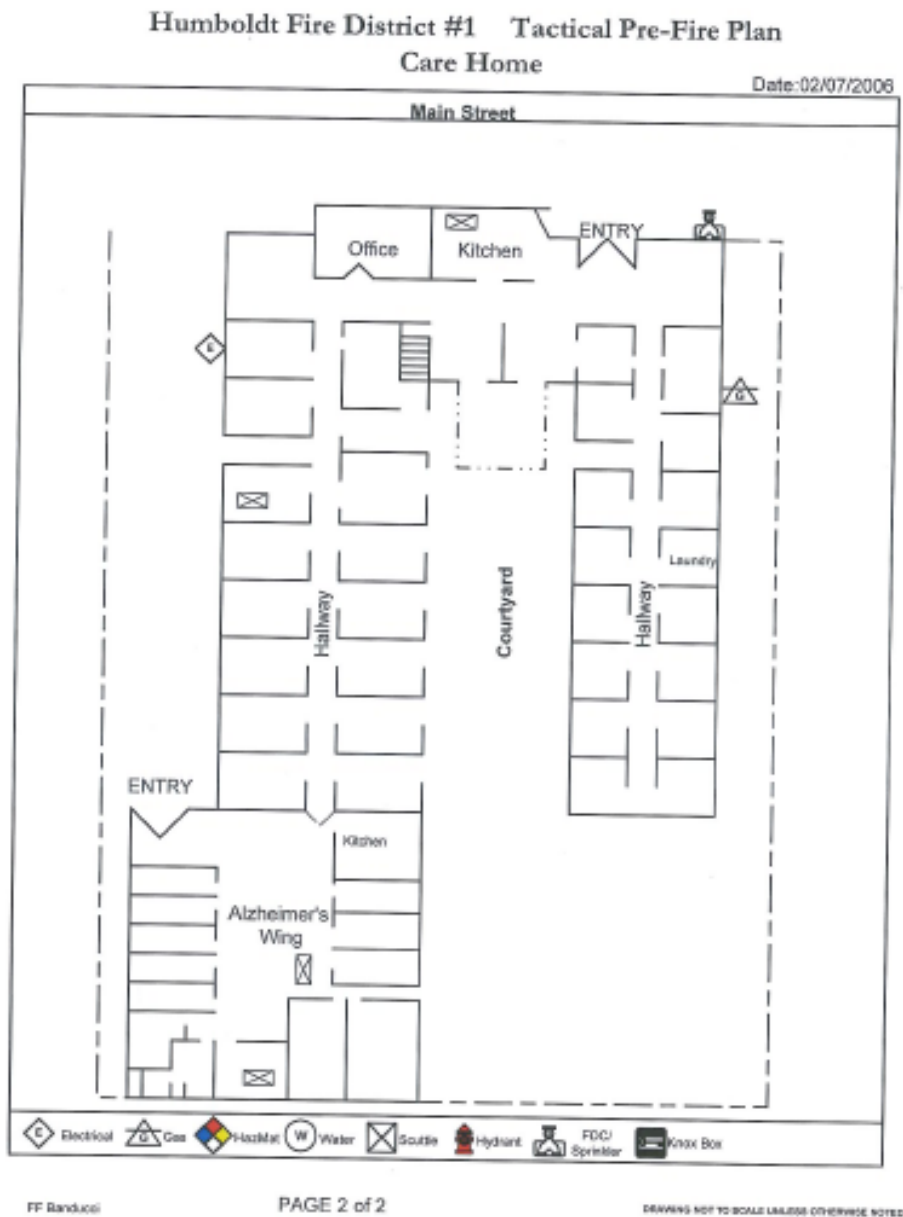
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DRAWING NOT TO SCALE UNLESS OTHERWISE NOTED



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### References

- NFPA 170: Standard for Fire Safety and Emergency Symbols, Sections XXX
- NFPA 1620: Standard for Preincident Planning, Sections 1.1, 3.3.41, 4.6, A4.6, and p. 191-194.

## **Code Enforcement and Appeal Process**

### **The Role of the Company Officer in Regards to Code Enforcement**

Is a "reasonable degree of fire safety" a subjective judgment made by inspectors? It can be argued that most codes and standards were developed based upon a previous large fire loss or fire fatality. Lessons learned from fires such as the Iroquois Theater Fire, Shirtwaist Fire, and the Beverly Hills Supper Club helped redefine fire codes and standards, as we know them.

### **Codes and Fire Hazards**

Adopted codes, standards, and ordinances are generally adopted to address past issues in fire loss history. As such, a reasonable degree of fire safety is attained by general compliance with codes. However, we live in a time of ever-changing technologies and conditions. There will always be instances where codes and standards do not address the situations at hand. In these cases, the inspector must rely on the factual conditions presented, coupled with a sound understanding of fire behavior, chemistry, and physics. Only then can the spirit of the code, fire prevention in particular, be achieved.

The NFPA 550 Guide to the Fire Safety Concept Tree introduces a concept model that achieves reasonable fire safety by addressing the objectives of preventing fire ignition or managing fire impact.

Given the basic knowledge of the fire tetrahedron, we can apply the first of these two objectives by preventing fire ignition with separation or control. Providing separation or control of ignition sources will ensure that heat does not mix with oxygen and fuels to begin the combustion process. Required fire-rated walls with automatic door closures are a common example utilized to separate boilers or incinerators from storage areas.

The second objective acknowledges that we will not prevent every fire that occurs. With this in mind, we must mitigate or lessen the negative effects of fire after a fire occurs. Understanding the various stages of fire and trying to shape positive reactions prior to free burning or flashover may be enough to ensure early extinguishment or evacuation from a building. Automatic fire sprinklers have an outstanding track record in controlling fires at early stages and preventing flashover. Automatic heat or smoke detectors can identify products of combustion early to begin an evacuation plan.

The advantages of a sound company inspection program are clear. Company Officers should recognize the role their presence plays in fire prevention and address the "big ticket" items they find that will prevent fire or reduce the damage from fire. Where time does not permit or the issues are beyond the knowledge of company personnel, these issues should be brought to the attention of the Fire Prevention Bureau. Obvious issues are:

- Sources of ignition
- Fuel loads
- Exiting issues

The fire company inspection is also a pre-fire opportunity to ensure location and reliability of tactical issues such as:

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- Fire apparatus access
- Fire protection equipment
- Entry and egress points

#### **Violations**

Determining the "severity" of a violation will help the Company Officer achieve a reasonable degree of fire safety. This will allow the Company Officer to make determinations about correction or mitigation options.

Routine hazards are the most frequent of hazards and violations found. While the hazard or violation is not code compliant, the condition itself would not be the immediate cause of a fire or unsafe condition. For instance, the use of electrical extensions cords, fire extinguishers that are past due for service, etc.

Imminent hazards occur when it becomes obvious that the hazard or process poses an immediate hazard to life and property. Examples include blocked exits, inoperable fire alarm systems, or open flames or heat sources adjacent to combustibles.

Transient hazards are specific occurrences, which should be acted upon immediately through a citation. Changeable violations are corrected by the person responsible on a temporary basis (in most cases), but are changed back after the inspector leaves the premises. The same situations may be encountered annually and are not under continuous abatement. Examples include Christmas tree lots or overstocked storage areas during the holiday season.

Regardless of the hazards or violation types, communications should be made to the responsible person(s) to ensure each item is addressed. While it may be acceptable for a reasonable amount of time to be given for the correction of routine hazards or transient hazards, imminent hazards should be corrected or mitigated prior to the inspector leaving the premises.

#### **Compliance**

A sound inspection program should always seek to attain compliance at the lowest level. Prior to completing the inspection, the Company Officer should ensure the building has a reasonable degree of fire safety and will make appropriate modifications or corrections to ensure fire safety for all persons, including first responders. Voluntary compliance consists of:

- Education
- Partnering
- Bargaining legal compliance:
  - Administrative citation
  - Notice and order
  - Misdemeanor
  - Abatement order

#### **The Code Enforcement Appeal Process**

As with all enforcement proceedings, there is an appeal process to code enforcement procedures. This process may vary based upon the jurisdiction you come from. Most jurisdictions start with an informal process for appeal whereas person(s) may appeal the

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decision of the inspector or Company Officer through the fire department's hierarchy. Individuals should check with their respective fire department's policies or procedures to identify their department's expectations. An example of an appeal process is shown in your text (Figure 4.6, Page 60 of Fire Prevention Applications for the Company Officer).

#### **Fire Code Board of Appeals**

The International Fire Code appeal process recognizes the use of a Board of Appeals. While a fire code official is an ex-officio member of the board, the official does not have a vote on any matter the goes before the board. The Board of Appeals may order to hear and decide appeals of orders, decisions, or determinations bade by the Company Officer relative to the application and interpretation of the fire code. All decisions and findings shall be made in writing to the appellant.

In lieu of a fire code appeals board, a jurisdiction may opt to pre-designate an appeal-hearing officer with the same responsibilities as a Fire Code Board of Appeals.

#### **Interpretations of State Fire Marshal Regulations**

Any person may request an interpretation of regulation(s) adopted by the state fire marshal. The state fire marshal shall review the issue with the appropriate local enforcement agency prior to rendering an interpretation.

#### **Appeal of Alternate Means of Protection in State Regulated Occupancies**

If a jurisdiction denies a request for an alternate means of protection in a state regulated occupancy, an applicant may appeal directly to the state fire marshal for consideration. The state fire marshal may seek the advice of the State Board of Fire Services. Upon considering the facts presented, including any recommendations of the State Board of Fire Services, the state fire marshal shall render a decision and transmit the findings and any recommendations back to the applicant and to the enforcing agency.

#### **References**

- NFPA 550 Guide to the Fire Safety Concept Tree, NFPA 2007 Edition.
- (2010) *California Fire Code*. California Building Standards Commission. (§1.11.2.1.2, §1.11.25).

## **Hazardous Processes**

### **Fuel-dispensing Definitions**

#### **Aircraft Motor Vehicle Fuel-dispensing Facility**

That portion of property where flammable or combustible liquids or gases used as motor fuels are stored and dispensed from fixed automotive-type equipment into the fuel tanks of aircraft.

#### **Automotive Motor Fuel-dispensing Facility**

That portion of property where flammable or combustible liquids or gases used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles.

#### **Marine Motor Fuel-dispensing Facility**

That portion of property where flammable or combustible liquids or gases used as fuel for watercraft are stored and dispensed from fixed equipment on shore, piers, wharves, floats or barges into the fuel tanks of watercraft.

#### **Self-Service Motor Fuel-dispensing Facility**

That portion of motor fuel-dispensing facility where liquid motor fuels are dispensed from fixed approved dispensing equipment into the fuel tanks of motor vehicles by persons other than a motor fuel-dispensing facility attendant.

### **Motor Fuel-dispensing Facilities**

#### **Emergency disconnect switches**

An approved, clearly identified and readily accessible emergency disconnect switch shall be provided at an approved location to stop the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. An emergency disconnect switch for exterior fuel dispensers shall be located within 100 feet of, but not less than 20 feet from the fuel dispensers.

#### **Attended Self-service Motor Fuel-dispensing Facilities**

Attended self-service motor fuel-dispensing facilities shall comply with Sections 2204.2.1 through 2204.2.5. Attended self-service motor fuel-dispensing facilities shall have at least one qualified attendant on duty while the facility is open for business. The attendant's primary function shall be to supervise, observe and control the dispensing of fuel. The attendant shall prevent the dispensing of fuel into containers that do not comply with Section 2204.4.1, control sources of ignition, give immediate attention to accidental spills or releases, and be prepared to use fire extinguishers. Ref: CFC, 2010 Edition, Section 2204.2, page 302

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### **Unattended Self-service Motor Fuel-dispensing Facilities**

Where approved, unattended self-service motor fuel-dispensing facilities are allowed. As a condition of approval, the owner or operator shall provide, and be accountable for, daily site visits, regular equipment inspection and maintenance.

### **Sources of Ignition**

Smoking and open flames shall be prohibited in areas where fuel is dispensed. The engines of vehicles being fueled shall be shut off during fueling.

### **Warning Signage**

Warning signs shall be conspicuously posted within sight of each dispenser in the fuel-dispensing area stating:

- No smoking
- Shut off motor
- Discharge your static electricity before fueling by touching a metal surface away from the nozzle
- To prevent static charge, do not reenter your vehicle while gasoline is pumping
- If a fire starts, do not remove nozzle-back away immediately
- It is unlawful and dangerous to dispense gasoline into unapproved containers
- No filling of portable containers in or on a motor vehicle.
  - Place container on ground before filling

### **Portable Fire Extinguishers**

An approved portable fire extinguishers with a minimum rating of 2-A:20-B:C shall be provided and located not more than 75 feet from pumps, dispensers or storage tank fill-pipe openings.

### **Housekeeping**

Weeds, grass, brush, trash, and other combustible materials shall be kept not less than 10 feet from fuel-dispensing equipment.

### **Physical Protection of Aboveground Tanks**

Guard posts shall be provided to protect above-ground tanks against impact by a motor vehicle unless the tank is listed as a protected above-ground tank with vehicle impact protection.

### **Dispenser Hose**

Dispenser hoses shall be a maximum of 18 feet in length unless otherwise approved.

### **Gravity and Pressure Dispensing**

Flammable liquids shall not be dispensed by gravity from tanks, drums, barrels or similar containers. Flammable or combustible liquids shall not be dispensed by a device operating through pressure within a storage tank, drum or container.

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### **Liquefied Petroleum Gas Motor Fuel-dispensing Facilities**

#### **Hoses**

Hoses and piping for the dispensing of LP-gas shall be provided with hydrostatic relief valves. The hose length shall not exceed 18 feet, an approved method shall be provided to protect the hose against mechanical damage.

#### **Vehicle Impact Protection**

Vehicle impact protection for LP-gas storage containers, pumps and dispensers shall be provided.

### **Compressed Natural Gas (CNG) Motor Fuel-dispensing Facilities**

#### **Location of Dispensing Operations and Equipment**

Compression, storage and dispensing equipment shall be located above ground and outside unless approved by the California Building Code. Dispensing equipment shall be installed as follows:

- Not beneath power lines
- Ten feet or more from the nearest building or lot line that could be built on:
  - Public street
  - Sidewalk
  - Source of ignition
- Fifty feet or more from the vertical plane below the nearest overhead wire of a trolley bus line

#### **Emergency Shutdown Control**

An emergency shutdown control shall be located within 75 feet of, but not less than 25 feet from, dispensers and shall also be provided in the compressor area.

#### **Grounding and Bonding**

The structure or appurtenance used for supporting the cylinder shall be grounded in accordance with the California Electrical Code.

#### **Signage**

Approved "No Smoking" signs shall be posted within 10 feet of the cylinder support structure or appurtenance, and Approved "CYLINDER SHALL BE BONDED" signs shall be posted on the cylinder support structure or appurtenance.

### **Hydrogen Motor Fuel-dispensing and Generation Facilities**

#### **Listed Equipment**

Hoses, hose connections, compressors, hydrogen generators, dispensers, detection systems and electrical equipment used for hydrogen shall be listed for use with hydrogen. Hydrogen motor fueling connections shall be listed and labeled for use with hydrogen.

#### **Maintenance**

Gaseous hydrogen systems and detection devices shall be maintained in accordance with the manufacturer's instructions.

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### **Smoking**

Smoking shall be prohibited in hydrogen cutoff rooms. "No Smoking" signs shall be provided at all entrances to hydrogen cutoff rooms.

### **Ignition Source Control**

Open flames, flame-producing devices and other sources of ignition shall be controlled at all times.

### **Housekeeping**

Hydrogen cutoff rooms shall be kept free from combustible debris and storage at all times.

### **Fire Extinguishing Systems**

Fuel-dispensing areas under canopies shall be equipped throughout with an approved automatic sprinkler system.

### **Protection from Vehicles**

Guard posts or other approved means shall be provided to protect hydrogen storage systems and use areas subject to vehicular damage.

## **Marine Motor Fuel-dispensing Facilities**

### **Dispensing**

Wharves, piers or floats at marine motor fuel-dispensing facilities shall be used exclusively for the dispensing or transfer of petroleum products to or from marine craft is allowed.

### **Hoses and Nozzles**

Dispensing of Class I, II or IIIA liquids into the fuel tanks of marine craft shall be by means of an approved-type hose equipped with a listed automatic-closing nozzle without a latch-open device. Hoses used for dispensing or transferring Class I, II or IIIA liquids, when not in use, shall be reeled, racked or otherwise protected from mechanical damage.

### **Housekeeping**

Marine motor fuel-dispensing facilities shall be maintained in a neat and orderly manner.

### **Spills**

Spills of Class I, II or IIIA liquids at or on the water shall be reported immediately to the fire department and jurisdictional authorities.

### **Rubbish Containers**

Metal containers with tight-fitting or self-closing metal lids shall be provided for the temporary storage of combustible trash or rubbish.

### **Smoking**

Smoking or open flames shall be prohibited within 50 feet of fueling operations. "No Smoking" signs shall be posted conspicuously about the premises.

### **Warning Signage**

Warning signs shall be prominently displayed at the face of each wharf, pier or float at such elevation as to be clearly visible from the decks of marine craft being fueled. Such signs shall



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have letters not less than 3 inches in height on a background of contrasting color bearing the following or approved equivalent wording:

**WARNING**  
**NO SMOKING-STOP ENGINE WHILE FUELING,**  
**SHUT OFF ELECTRICITY.**  
**DO NOT START ENGINE UNTIL AFTER BELOW**  
**DECK SPACES ARE VENTILATED.**

#### **Standpipe Hose Stations**

Fire hose, where provided, shall be enclosed within a cabinet, and hose stations shall be labeled:

**FIRE HOSE**  
**EMERGENCY USE ONLY**

#### **Obstruction of Fire Protection Equipment**

Materials shall not be placed on a pier in such a manner as to obstruct access to fire-fighting equipment or piping system control valves.

#### **Portable Fire Extinguishers**

Portable fire extinguishers having a minimum rating of 20-B: C, shall be provided as follows:

- One on each float
- One on the pier or wharf within 25 feet of the head of the gangway to the float

Unless the office is within 25-feet of the gangway or is on the float and an extinguisher is provided thereon

#### **High-piled Storage**

California Fire Code Definition

Combustible materials in closely packed piles more than 12 feet high. Height is measured from the floor to the top of the storage, **not** to the top of the shelf. Combustible materials on pallets or in racks more than 12 feet high. Special hazard commodities over 6 feet high, including tires, plastics and flammable liquids.

#### **Housekeeping and Maintenance**

To maintain high-piled storage, one must maintain the structural integrity of the racks. Smoking is prohibited, and an approved sign must be posted. Aisles must be kept clear of storage and waste materials.

#### **Fire Protection and Life Safety System Requirements**

Fire Protection and Life Safety Systems and Features depend on

- Size of building
- Type of commodity
- Height of racks

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These systems may include

- Building sprinklers
- In-rack sprinklers
- Heat and smoke detectors
- Hose cabinets
- Fire extinguishers
- Smoke removal system

### **Building Access**

Roadways shall be provided to within 150 feet of all portions of the building; access doors must be readily accessible and one or more access doors shall be provided in each 100 linear feet of exterior wall.

### **Tire Storage**

#### **Outdoor Storage**

Tire storage is restricted to 5,000 square feet per pile with a maximum height of 10 feet height. Tire storage piles must be separated from other tire piles, combustible vegetation and products by 40 feet and from buildings and property lines by 50 feet (12 192 mm).

#### **Inside Storage**

Where tires are stored on-tread, the dimension of the pile in the direction of the wheel hole shall not be more than 50 feet. Tires stored adjacent to or along one wall shall not extend more than 25 feet from that wall. Other piles shall not be more than 50 feet.

#### **Fire Department Access**

New and existing tire storage yards shall be provided with fire apparatus access roads so that all points of the storage area are within 150 feet of the road. Fire apparatus access roads shall be located at least 20 feet from storage piles.

### **Tents and Membrane Structures**

An Operational Permit is required for air supported temporary membrane structures, tents and canopies with an area greater than 200 square feet or a canopy over 400 square feet. Permits are not required for recreational camping tents or fabric canopies that are open on all sides and which comply with all of the following:

- Individual canopies having a maximum size of 700 square feet.
- The aggregate area of multiple canopies placed side by side, without a minimum firebreak of 12 feet, does not exceed 700 square feet.
- A minimum clearance of 12 feet to structures and other tents shall be provided.

Temporary tents, air-supported, air-inflated or tensioned membrane structures and canopies shall not be erected for a period of more than 180 days per year at one location.

#### **Exits**

Exits shall be provided and clearly marked. Exit signs shall be installed at all required exits and must clearly indicate the direction of egress travel when the exit serves an occupant load of 50

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or more. Exit signs must be an approved self-luminous type or shall be internally or externally lit. The required width of exits, aisles and passageways shall be maintained at all times to a public way.

#### **Combustible Materials**

Hay, straw, shavings or similar combustible materials shall not be located within any tent, canopy or membrane structure containing an assembly occupancy except for that which is necessary for feeding and care of animals. Sawdust and shavings utilized for a public performance or exhibit shall not be prohibited and the sawdust and shavings must be kept damp. Combustible materials shall not be permitted under stands or seats at any time and trash shall be removed at least once a day.

The areas within and adjacent to the tent or air-supported structure shall be maintained clear of all combustible materials or vegetation within 20 feet of the structure.

#### **Heating and Cooking Equipment**

The Fire Code permits food warming, cooking demonstrations and similar operations using solid flammable fuel, butane or other similar devices that do not pose an ignition hazard.

Cooking tents must be separated from other tents, canopies or membrane structures by a minimum of 20 feet. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet of a tent, canopy or membrane structure.

LP-gas equipment such as tanks, piping, hoses, fittings, valves, tubing and other related components must be approved. LP-gas containers shall be located outside of tent. Portable LP-gas containers with a capacity of 500 gallons or less shall have a minimum separation between the container and structure of not less than 10 feet.

#### **References**

- State of California. (2010). *California Fire Code*. Sacramento, CA: California Building Standards Commission. (p. 301-315).

# When Hazardous Materials are Encountered During a Company Inspection

## Definitions

### Control Area

Spaces within a building where quantities of hazardous materials not exceeding the maximum allowable quantities (MAQ's) per control area are stored, dispensed, used or handled (refer to Maximum Allowable Quantities).

### Dispensing

The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

### Flammable Vapors or Fumes

The concentration of flammable constituents in air that exceeds 25% of their lower flammable limit (LFL).

### Health Hazards

Materials with a primary classification as a health hazard can also pose a physical hazard, i.e., highly toxic and toxic materials, and corrosive materials. Hazardous materials shall be classified according to hazard categories. The categories include materials regulated by Chapter 27 and materials regulated elsewhere in the California Fire Code.

### Immediately Dangerous To Life And Health (IDLH)

The concentration of airborne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability.

### Incompatible Materials

Materials that, when mixed, have the potential to react in a manner which generate heat, fumes, gases or byproducts which are hazardous to life or property.

### Maximum Allowable Quantity (MAQs) Per Control Area

The maximum amount of a hazardous material allowed to be stored or used within a control area inside a building or an outdoor control area. The MAQ per control area is based on the material state (solid, liquid or gas) and the material storage or use conditions.

### Mixtures

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Mixtures shall be classified in accordance with hazards of the mixture as a whole. Mixtures of hazardous materials shall be classified in accordance with nationally recognized reference standards; by an approved qualified organization, individual, or Material Safety Data Sheet (MSDS); or by other approved methods.

### Normal Temperature and Pressure (NTP)

A temperature of 70°F (21°C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

### Physical Hazard

A material with a primary classification as a physical hazard can also pose a health hazard, i.e., explosives and blasting agents, combustible liquids, flammable solids, liquids and gases, organic peroxide solids or liquids, oxidizers, solids or liquids, oxidizing gases, pyrophoric solids, liquids or gases, unstable (reactive) solids, liquids or gases, water-reactive solids or liquids, cryogenic fluids.

### Safety Can

An approved container of not more than 5-gallon (19 L) capacity having a spring-closing lid and spout cover so designed that it will relieve internal pressure when subjected to fire exposure.

### Use (Material)

Placing a material into action, including solids, liquids and gases.

### Defective Containers and Tanks

Defective containers and tanks shall be removed from service, repaired in accordance with approved standards or disposed of in an approved manner.

### Unauthorized Discharge

When hazardous materials are released in quantities reportable under state, federal or local regulations, the fire code official shall be notified.

### Records

Accurate records shall be kept of the unauthorized discharge of hazardous materials by the permit holder.

### Responsibility for cleanup

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The person, firm or corporation responsible for an unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, at no cost to the jurisdiction. When deemed necessary by the fire code official, cleanup may be initiated by the fire department or by an authorized individual or firm. Costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge.

### Material Safety Data Sheets (MSDS)

Material Safety Data Sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by Chapter 27 of the California Fire Code. When a hazardous substance is developed in a laboratory, available information shall be documented.

### Hazard Identification Signs

Unless otherwise exempt by the fire code official, visible hazard identification signs as specified in NFPA 704 for the specific material contained shall be placed on stationary containers, aboveground tanks, and at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit and at specific entrances and locations designated by the fire code official.

### Markings

Individual containers, cartons or packages shall be conspicuously marked or labeled in an approved manner. Rooms or cabinets containing compressed gases shall be conspicuously labeled in capital letters: COMPRESSED GAS. Signs and markings required by Sections 2703.5 and 2703.5.1 of the California Fire Code shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be approved.

### Industrial Trucks

Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with the California Electrical Code shall be listed and labeled for use in the environment intended in accordance with NFPA 505.

### Hazardous Material in Group M and S: Display and Storage Areas

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The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single control area of a Group M display and storage area or a Group S storage area is allowed to exceed the maximum allowable quantities per control area specified in Tables 2703.1.1(1) and 2703.1.1(2) in the California Fire Code without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with Section 2703.11 of the California Fire Code.

#### Maximum Number of Cylinders Per Gas Cabinet

The number of cylinders contained in a single gas cabinet shall not exceed three.

### **Storage of Hazardous Materials**

- Secondary Containment for Hazardous Material Liquids and Solids
  - Where required by Table 2704.2.2 of the California Fire Code, buildings, rooms or areas used for the storage of hazardous materials liquids or solids shall be provided with secondary containment.
- Monitoring
  - An approved monitoring method shall be provided to detect hazardous materials in the secondary containment system.
- Containment Pallets
  - When used as an alternative to spill control and secondary containment for outdoor storage in accordance with the exception in Section 2704.2 of the California Fire Code, containment pallets shall comply with all of the following:
    - A liquid tight sump accessible for visual inspection shall be provided
    - The sump shall be designed to contain not less than 66 gallons (250 L)
    - Exposed surfaces shall be compatible with material stored
    - Containment pallets shall be protected to prevent collection of rainwater within the sump

### **Transportation Placards, Labels, and Markings**

#### **UN Placarding System**

The UN Placarding System provides uniform and standardized regulations for hazardous material identification. This enhances safety by improving capabilities for accurate recognition of hazardous materials or dangerous goods and by eliminating duplicate or inconsistent marking and labeling systems.

The UN Placarding System categorizes hazardous materials into nine classifications. These classify hazardous materials based on their actual and potential risks to people, property and the environment.

- Class 1: Explosives

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- Class 2: Gases
- Class 3: Flammable liquids
- Class 4: Flammable solids, substances liable to ignite spontaneously, substances that emit flammable gases on contact with water
- Class 5: Oxidizing substances and organic peroxides
- Class 6: Toxic and infectious substances
- Class 7: Radioactive substances
- Class 8: Corrosive substances
- Class 9: Miscellaneous dangerous substances and articles

The UN System uses four digit commodity identification numbers. Each hazardous material is assigned its own specific number. These numbers are displayed on placards, labels, orange panels, and/or white diamonds. They may also be found on orange panels, with the number preceded by the letters "UN." UN product identification numbers are identified in yellow-bordered pages of Emergency Response Guidebook (ERG). These numbers should appear on shipping papers and should match numbers displayed on exteriors of tanks or shipping containers.

#### **DOT Placards, Labels, and Markings**

These systems are based on the UN system and classify hazardous materials according to primary dangers and assign standardized symbols to identify hazard classes and include additional categories such as "Other Regulated Materials" (ORM-Ds).

The standard U.S. system was developed by the Department of Transportation and uses placards, labels and markings.

A DOT placard is a diamond-shaped, color-coded sign that shippers provide to identify materials in transportation containers. Placards have regulations that specify their size, color, message, and visual graphics. They may be found on any container transporting any quantity of certain extremely hazardous materials and are required on any material shipped in quantities of 1,001 pounds (454 kg) or greater. Placards are not required when any of the materials listed in Table 14.11 is less than 1,001 pounds (454 kg) for any one shipment. They can be found on a bulk packages, rail tank cars, cargo tank vehicles, portable tanks, or unit loading devices containing hazardous materials over 640 cubic feet (18 m<sup>3</sup>) in capacity.

A DOT label is printed on 3.9-inch (100 mm) square-on-point diamond that may or may not have written text identifying the hazardous material inside the package. DOT labels communicate the hazards posed by the material if the package falls from the transport vehicle and spills its contents. Each hazard label class is assigned a pictogram and division number. The package will have a primary label for materials that meet definition of more than one hazard class. DOT labels provide information similar to vehicle placards and may be found on non-bulk packaging. Several DOT labels may be found side by side on packages with the primary hazard label located on left and secondary/subsidiary class label on right. Subsidiary classes must have class numbers displayed.



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Improperly marked, unmarked, and otherwise illegal shipments are common. An inspector must be extremely suspicious of unmarked or mismarked containers.

#### **OSHA Identification Marking Requirements**

Other markings may not apply to all materials in transit. Some are required by the federal government for packages, containers, compartments, and buildings to indicate the presence of hazardous materials.

OSHA's Hazardous Communications Standard (HCS) requires employers to identify hazards in workplace, train employees on hazard recognition, and ensure all hazardous material containers are labeled, tagged, or marked with the identity of the substances contained in them.

For OSHA identification marking requirements, chemical manufacturers and importers are required to provide appropriate labels on product containers that include the name of product, manufacturer's contact information, precautionary hazard warnings, directions for use and handling, names of active ingredients, first aid instructions and other pertinent information.

#### **NFPA 704 System**

The NFPA 704 system provides a hazard number rating to rapidly identify the presence of hazardous materials and their potential severity based on health, flammability, instability, and other related hazards. It does not provide specific information on type, specific location, or quantity of material.

The 704 System is widely recognized method for indicating presence of hazardous materials. It is commonly required by local ordinances for all occupancies that contain hazardous materials. The 704 System is designed to alert emergency responders to health, flammability, instability, related hazards that may present short-term, acute exposures resulting from a fire, spill, or similar emergency. It is not designed for transportation, the general public use or for any of the following:

- Non-emergency occupational exposures
- Explosives and blasting agents
- Chronic health hazards
- Etiologic agents and other similar hazards

The 704 System uses the following design concepts:

- Ratings - uses system of numbers from 0 (minimal hazard) to 4 (severe hazard)
- Hazard Categories — Health, flammability, instability
- Hazard Categories are arranged on diamond-shaped marker or sign
  - Health rating — Blue background
  - Flammability hazard — Red background
  - Instability — Yellow background
  - Alternative Information — Background can be any contrasting color, with the number 0 to 4 represented by appropriate color.
- Special hazards are located in six o'clock position that has no specified background color (white is most common color used). Only three symbols presently authorized:
  - W — Indicates unusual reactivity with water

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- OX — Indicates material is an oxidizer
- SA – “Simple Asphyxiants” (nitrogen, helium, neon, argon, krypton, xenon)

The NFPA 704 diamond does not identify the specific chemical (or chemicals) or the specific quantities present. Positive identification of materials needs to be made through other means such as container markings, employee information, company records or pre-incident surveys.

#### **Manufacturer’s Labels and Warning Words**

The U.S. Federal Hazardous Substances Act requires labels on products destined for use by consumer households to have one of the following signal words to indicate the degree of hazard associated with the product.

- Caution — May have minor health effects
- Warning — Moderate hazards that have significant health effects or flammability
- Danger — The highest degree of hazard; used on products that explode when exposed to heat
- Poison — Use in addition to danger on labels of highly toxic materials

#### **Alcohol-based Hand Rub Dispensers**

The use of wall-mounted dispensers containing alcohol-based hand rubs classified as Class I or II liquids shall be in accordance with all of the following:

- The maximum capacity of each dispenser shall be 68 ounces
- The minimum separation between dispensers shall be 48 inches
- The dispensers shall not be installed directly adjacent to, directly above or below an electrical receptacle, switch, appliance, device or other ignition source
- The wall space between the dispenser and the floor shall remain clear and unobstructed
- Dispensers shall be mounted so that the bottom of the dispenser is a minimum of 42 inches and a maximum of 48 inches above the finished floor
- Dispensers shall not release their contents except when the dispenser is manually activated
- Storage and use of alcohol-based hand rubs shall be in accordance with the applicable provisions of Sections 3404 and 3405
- Dispensers installed in occupancies with carpeted floors shall only be allowed in smoke compartments or fire areas equipped throughout with an approved automatic sprinkler system

#### **Material Safety Data Sheet (MSDS)**

Federal hazardous materials regulations have established “Employee Right to Know” laws. Employers must notify employees, and “visitors” (including first responders) about the known and potential hazards of all chemicals and other materials found in the workplace. Employers can comply with this regulation by permanently providing a readily available list of Hazardous Material Safety Data Sheets on the premises.

The California Fire Code requires employers to identify and maintain a list of all hazardous materials used in the workplace, including MSDS reference documents. These documents must

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be updated on an as-needed basis. In addition, the employer is responsible for ensuring that all products are accurately labeled, provide a written hazardous materials mitigation plan and administer a training plan that teaches all employees about the chemical hazards found in their workplace. CAL-OSHA is primarily responsible for enforcing these requirements.

CAL-OSHA has established minimum formatting requirements for workplace MSDS documents. As applicable, each MSDS document will have eight sections of information provided for employee review and familiarization:

- Chemical Manufacturer's Information
  - Name and address
  - Emergency telephone number
  - Information telephone number
  - Signature and data
- Hazardous ingredients
  - Common name
  - Chemical abstract service number
  - OSHA permissible exposure limit
  - Threshold limit value
  - Other exposure limits
- Physical and chemical characteristics
  - Boiling point
  - Specific gravity
  - Vapor pressure
  - Melting point
  - Vapor density
  - Evaporation rate
  - Solubility in water
  - Appearance and odor
- Fire and explosion hazard data
  - Flash point
  - Flammable limit
  - Extinguishing media
  - Special fire-fighting procedures
  - Unusual fire and explosion hazard
- Reactivity data
  - Stability
  - Incompatibility
  - Hazardous decomposition or by-products
  - Hazardous polymerization
- Health Hazard data
  - Routes of entry
  - Health hazards (acute or chronic)
  - Carcinogenicity

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- National Toxicology Program (NTP)
  - International Agency for Research on Cancer (IARC)
  - Cal/OSHA regulated
  - Signs and symptoms of exposure
  - Medical conditions aggravated by exposure
  - Emergency and first aid procedures
- Precautions for safe handling and use
  - Steps to be taken in case of a spill or release
  - Waste disposal methods
  - Handling and storing precautions
  - Other precautions
- Control measures
  - Respiratory requirement, if needed
  - Ventilation needed
  - Protective gloves
  - Eye protection
  - Work/hygienic practices

Unfortunately, not all MSDS pages have a standard content format or look alike. Each manufacturer produces MSDS forms according to their own preferences and provides only the information the manufacturer believes is applicable to their product. While certain information may not be published by the manufacturer, MSDS documents provide a quick overview of the product's characteristics and hazards. Therefore, it is necessary to verify product hazards using a minimum of two other sources of information about the chemical and its hazards before taking mitigation actions for spills, releases or fire incidents.

### References

- IFSTA. (2009). *Fire Inspection and Code Enforcement*. Stillwater, OK: Fire Protection Publications (p. 585-603).
- State of California. (2010). *California Fire Code*. Sacramento, CA: California Building Standards Commission. (ch. 27 and 34).

## **State of California WUI Regulations**

### **Introduction**

Wildfires are extremely costly to property owners, residents, and local agencies. The fire front is not the only source of risk; embers and firebrands travel far beyond the area impacted by the fire front, posing an ignition threat to structures or fuels over a longer period of time.

Since fires ignore jurisdictional boundaries, it is necessary that cities, counties, special districts, state agencies, and federal agencies develop the preventive measures necessary for public safety.

The prevention of wildland fires is not strictly a municipal matter, but a matter of statewide concern. The state's Wildland Urban Interface (WUI) regulations are found in the California Fire Code, CCR Titles 14 and 19, California Government Code, and the California Public Resource Code.

These regulations classify land types in California and allow local public officials to identify and require mitigation measures that will retard the rate of spread and reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property. None of the regulations limit the authority of a local agency to impose more restrictive fire and public safety requirements.

### **Definitions**

Local Agency Very High Fire Hazard Severity Zone

An area designated by a local agency upon the recommendation of the CDF Director pursuant to Government Code Sections 51177(c), 51178 and 5118 that is not a state responsibility area and where a local agency, city, county, city and county, or district is responsible for fire protection.

State Responsibility Area (SRA)

Lands that are classified by the Board of Forestry pursuant to Public Resource Code Section 4125 where the financial responsibility of preventing and suppressing forest fires is primarily the responsibility of the state.

Wildland Urban Interface Fire Area

A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resource Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. See Section 706A for the applicable referenced sections of the Government Code and the Public Resource Code.

### **Vegetation Management And Fuel Modification Zones**

The intent of fuel modification standards is to:

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- Reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation
- Increase the safety of emergency fire equipment and evacuating civilians
- Provide a point of attack or defense from a wildfire

#### **California Code of Regulations, Title 14**

Article 3 of Title 14 specifies minimum fire hazard reduction practices around buildings and structures in State Responsibility Areas. The intent of Article 3 is to provide guidance for implementation of Public Resource Code 4291(a) and (b), and to minimize the spread of fire within a 100-foot zone around a building or structure.

Any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and is within State Responsibility Area shall:

- Provide and maintain a firebreak within 30 feet from each building or structure by removing and clearing away all flammable vegetation and other combustible growth. Single specimens of trees or other vegetation may be kept if they are well spaced, well pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
- Provide and maintain a fuel break within the "Reduced Fuel Zone" (30 feet to 100 feet from each building or structure, or to the property line, whichever is closer to the structure), by disrupting the vertical and / or horizontal continuity of flammable and combustible vegetation. This will reduce fire intensity, inhibit fire reaching the crowns of trees, reduce the rate of fire spread, and provide a safer environment for fire fighters to suppress wildfires.

All vegetation identified as a fire hazard shall be removed or modified when required by the Authority Having Jurisdiction.

#### **Title 19 of the California Code of Regulations, Government Code Section 51175-51189 and Public Resources Code 4291**

Title 19 applies to both SRA and LRA lands. The provisions of Government Code Sections 51175 through 51189 (LRA) and California Public Resources Code 4291 (SRA) contain similar, if not identical, requirements.

In general, no combustible material shall be placed or stored within 10 feet of any building or structure.

Any person who owns, leases, controls, operates, or maintains any building or structure in, upon, or adjoining any mountainous area or forest-covered lands, brush covered lands, or grass-covered lands, or any land which is covered with flammable material shall, at all times, do all of the following:

- Maintain a firebreak by removing and clearing all flammable vegetation or combustible growth for a minimum of 30 feet around each side of the building (or to

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the property line, whichever is nearer). This does not apply to single specimens of trees, ornamental shrubbery, or similar plants, which are used as ground cover, if they do not form a means of rapidly transmitting, fire from the native growth to any building or structure.

- Maintain a firebreak around all buildings by removing all brush, flammable vegetation, or combustible growth located between 30 and 100 feet (or to the property line, whichever is nearer) from all buildings or structures, if the enforcing agency finds that a firebreak of only 30-feet around the buildings is not sufficient to provide reasonable fire safety.

Grass and other vegetation located more than 30 feet from such building or structure and less than 18-inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion.

The amount of fuel modification performed must take into consideration the flammability of the structure as affected by the building material, the building's location, and type of vegetation present. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure.

Government Code 51182 is more restrictive than Title 19 and requires a minimum defensible space of 100 feet around all structures. Both the government and Public Resource Code restrict an insurance company's ability to require more than 100 feet of defensible space around buildings and limits fuel modification beyond property lines under specific guidelines. A property owner is not required to manage fuels on off-site lands if they do not have the legal right to manage those fuels, nor is anyone required to alter vegetation owned by another person.

The requirements of Government Code Section 51182 do not apply to any land used for one or more of the following purposes:

- Habitats for endangered or threatened species
- Lands kept in a natural state for wildlife, plant, or animal habitats
- Environmentally sensitive open space lands
- Remove any portion of a tree that is within 10 feet of a chimney or stovepipe.
- Cut and remove all dead or dying portions of trees next to or overhanging any building.
- Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.
- Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed of nonflammable material with openings of not more than one half inch in size.

### **California Code Requirements**

Regulations found in the California Fire Code apply to both SRA and LRA lands.

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Weeds, grass, vines, or other growth that is capable of being ignited and endangering property, must be cut down and removed by the owner or occupant of the premises. The Fire Code requires management of all hazardous vegetation according to the standards found in the Government Code, the Public Resources Code, and Titles 14 and 19.

#### **Fire Apparatus Access Requirements**

Title 14 Requirements and the California Fire Code have overlapping requirements for Fire Apparatus Access Roads. Public and private road networks must provide safe access for emergency wildland fire equipment and civilian evacuation, and shall provide unobstructed traffic circulation during a wildfire emergency.

Title 14 requires that all roads in SRA provide a minimum of two nine-foot traffic lanes for two-way traffic flow unless local jurisdictions have more stringent access requirements. Roads must be able to provide unobstructed access to conventional drive vehicles and shall be capable of supporting a 40,000-pound load.

Driveways shall provide a traffic lane with a minimum of 10 feet in width and unobstructed vertical clearance of 15 feet along its entire length. A turnaround shall be provided at all building sites on driveways over 300 feet in length, and shall be within 50 feet of the building.

If a driveway is serviced by a gate, the gate entrance shall be at least two feet wider than the width of the traffic lane(s) serving the gate. All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.

In SRA and LRA, the Fire Code requires that an approved Fire Apparatus Access Road be provided for every facility, building, or portion of building constructed or moved into the jurisdiction. The Fire Apparatus Access Road must extend to within 150 feet of all portions of the first story exterior walls of the building.

#### **Premises Identification**

Sections 1274 of Title 14 and 505 of the California Fire Code require that all new and existing buildings have a permanently posted and visible address to avoid response delays and facilitate locating fires. Approved address numbers shall contrast with their background, have Arabic numerals or alphabet letters with a minimum height of 4 inches and a minimum stroke width of 0.5 an inch.

The address must be placed at each driveway entrance and visible from both directions of travel along the road. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction. Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

#### **Incinerators**

Section 603 of the California Fire Code requires all commercial, industrial, and residential-type incinerators and chimneys to be constructed as regulated by the California Building and Mechanical Codes. All incinerators must have effective spark arrestors and burning may only take place during approved hours.



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If the fire code official determines that burning in incinerators located within 500 feet of mountains, brush, or grass-covered areas creates an undue fire hazard because of atmospheric conditions, burning shall be prohibited. The fire code official can require immediate discontinuance of incinerator use if they determine that smoke emissions are offensive to occupants of surrounding property or if the use of incinerators constitutes a hazardous condition.

### References

- State of California. (2010). *California Fire Code*. Sacramento, CA: California Building Standards Commission.
- State of California. *California Government Code*. Retrieved from [http://www.leginfo.ca.gov/.html/gov\\_table\\_of\\_contents.html](http://www.leginfo.ca.gov/.html/gov_table_of_contents.html) on December 31, 2012.
- State of California. *California Public Resource Code*. Retrieved from [http://www.leginfo.ca.gov/.html/prc\\_table\\_of\\_contents.html](http://www.leginfo.ca.gov/.html/prc_table_of_contents.html) on December 31, 2012.